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to ascertain the magnitude of the particles and the relative proportions of the different grades in terms of this scale. "Down to the particles measuring one-eighth of a millimeter all the separations were made by sieves, and below this the per cent of the weight of each grade was determined by microscopic measurements and by calculation from the number of grains counted in each grade" (page 6). Acknowledgment is made to Professor Milton Whitney for information concerning the mechanical analyses in the United States Department of Agriculture. The deposits examined include drifting sand, both rolled and dune, from Illinois, Indiana, Kansas, Nebraska, North Dakota and Massachusetts; and lee sand from Illinois, Kansas and North Dakota. In addition, special attention was given to atmospheric dust, formed and carried under various conditions, which was collected by ingenious devices. In the final pages the author discusses the principles of what may be called eolation, *i. e.*, eolic erosion (the deflation of Walther) and eolic deposition, and he refers to the bearing of the researches on the problem of the loess, though wisely withholds final judgment concerning the solution of the problem. The memoir carries inherent evidence of patient and painstaking labor; and, since the labor extended into a little-wrought but important field, it must take rank as a notable contribution to geology.

W J M.

SCIENTIFIC JOURNALS.

THE *American Journal of Science* for November contains the following articles:

'Another Episode in the History of Niagara Falls:' By J. W. Spencer. 'Apparatus for Measuring very High Pressures:' By A. deF. Palmer, Jr. 'Application of Iodine in the Analysis of Alkalies and Acids:' By C. F. Walker and David H. M. Gillespie. 'Associated Minerals of Rhodolite:' By W. E. Hinden and J. H. Pratt. 'Revision of the Moraines of Minnesota:' By J. E. Todd. 'Preliminary Report on some new marine Tertiary horizons discovered by Mr. J. B. Hatcher near Punta Arenas, Magellanes, Chile:' By A. E. Ortmann. 'Comparative Value of Different Kinds of Fossils in Determining Geological Age:' By O. C. Marsh. 'Families of *Sauropodus* and *Inosauria*:' By O. C. Marsh. 'Biotite-tinguaita Dike from Manchester by the Sea, Essex

County, Mass.:' By A. S. Eakle. 'Descriptions of new American Actinians with critical notes on other species, I.:' By A. E. Verrill.

THE *Journal of Comparative Neurology*, published quarterly at Granville, Ohio, and edited by President C. L. Herrick, Dr. O. S. Strong and Dr. C. Judson Herrick, has added to its collaborators Professor C. F. Hodge, of Clark University (Neurocytology, especially functional changes in nerve cells); Dr. G. H. Parker, Harvard University (The sense organs and nervous system of the invertebrates), and Professor A. D. Morrill, Hamilton College (The sense-organs of the vertebrates).

THE *Educational Review* for November opens with an article on the 'Status of the American Professor,' by 'One of Them.' The author urges that the American professor, with the exception of those in several of our larger universities, lacks a proper income, proper authority and proper leisure. Especial attention is called to the unfortunate fact that a college instructor can often only secure the advancement that is his due by securing a call from another university. The author might have added that the conditions are peculiarly bad in America, where an offer from a university is usually given privately and sometimes confidentially. In Germany a vacant position is usually offered to the man who is thought to be the best and who at the time holds a position that is considered less desirable, without regard to whether he is likely to accept or not. The German professors and docents have thus in their own subjects a rank depending on their reputation and efficiency, which is tolerably well known to the authorities of all the universities.

SOCIETIES AND ACADEMIES.

SECTION OF GEOLOGY AND MINERALOGY OF THE
NEW YORK ACADEMY OF SCIENCES,

OCTOBER 17, 1898.

THE first paper, by Professor J. F. Kemp, on the Minerals of the Copper Mines at Ducktown, Tenn., gave a brief history of the mines and described some of the processes employed in treating the ores, and the character of the rocks and associated minerals. The paper was illustrated with an extended series of lantern views

of the mines and the works, and with a suite of specimens. Professor Kemp referred particularly to the extremely interesting crystals of almandite garnet which he showed, in which the faces of the hexactahedron are strikingly developed, giving 48-sided forms, sometimes with small faces of the rhombic dodecahedron in addition. Zaisite also occurs in fine terminated crystals, and limonite of remarkable iridescence.

The second paper was by Dr. Arthur Hollick—Notes on the Glacial Phenomena of Staten Island—and embodied the general results of several years of study and exploration by himself and others. He outlined the topography of the island and the distribution of drift material upon it, and described the transported contents of the drift with relation to their sources. Most of the drift material is made up of the triassic sandstone and shale of the adjacent mainland, ground up by the ice sheet, but the boulders are largely brought from afar. They comprise material from all the fossiliferous beds of central New York, from the Potsdam to the Hamilton; but there is a great preponderance of Lower Helderberg and Schoharie grit. The fossils are in many cases finely preserved, have been collected in large quantities, and very carefully studied and determined. The question as to the route by which they have come, over the hilly and almost mountainous regions lying between their source and their resting place, is one of much interest.

The next paper was by Mr. Francis C. Nicholas—on the Sedimentary Formations of Northern South America—and dealt with a large area of little-explored country between the Caribbean coast and the northern Andes. It was illustrated by a most extensive and carefully labeled series of rocks, ores and minerals from many localities and horizons, to which it was impossible to do justice within the limits of the evening. Among many interesting points described and illustrated with specimens was the agency of the sun's heat as a rock-disintegrator, the changes of day and night temperature in high regions in the tropics producing a fracturing of the superficial portions of exposed rocks comparable in result to the action of frost in higher latitudes.

The last paper was by Mr. Geo. F. Kunz, upon a Meteoric Stone that fell at Andover, Maine, on August 5th last, with exhibition of the stone, or rather about half of it. The fall took place early in the morning of a cloudy and threatening day; so that the sound made by the meteor, which was heard for many miles around, was generally supposed to be thunder. A dark cloudy trail, like a dense smoke, followed and marked the path of the body through the air. Its course was from the north, southward, and in coming down it tore its way through a group of large trees, struck a heavy stone in a wall near the ground, and buried itself in the earth. Here it was found two days later, by that time entirely cooled. The specimen is a typical stony meteorite, with a thin black crust on the outside, and of a bright pale gray on the broken surface, with very little iron. It weighs about 7 lbs., and its description will appear later.

NEW BOOKS.

Instinct and Reason. HENRY RUTGERS MARSHALL. New York and London, The Macmillan Company. 1898. Pp. xiii + 574. \$3.50.

Truth and Error. J. W. POWELL. Chicago, The Open Court Publishing Company. 1898. Pp. 428. \$1.75.

Symbotæ Antillanæ seu fundamenta Floræ Indæ Occidentalis. IGNATIUS URBAN. Berlin, Borntraeger. 1898. Vol. I. Part I. Pp. 192. M. 10. 80 Pf.

Deutscher Botaniker Kalender für 1899. P. SYDOW. Berlin, Borntraeger. 1898. Pp. 198. M. 3.

Congrès national d'hygiène et de climatologie médicale de la Belgique et du Congo. Bruxelles, Hayez. 1898. 2d part. Pp. 247-890.

Traité élémentaire de mécanique chimique fondée sur la thermodynamique. P. DUHEM. Paris, A. Hermann. 1898. Vol. III. Pp. 380. 10 fr.

The Principles of Biology. HERBERT SPENCER. New York, D. Appleton & Co. 1898. Part I. Revised and Enlarged. Pp. xii + 706. \$2.00.